



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>B01L 3/14, B01J 19/00, C12Q 1/58, G06K 19/06</b>		A2	(11) International Publication Number: <b>WO 97/12680</b> (43) International Publication Date: <b>10 April 1997 (10.04.97)</b>																								
(21) International Application Number: <b>PCT/US96/15999</b>		4626 Exbury Court, San Diego, CA 92130 (US). DAVID, Gary, S. [US/US], 9477 Poole Street, La Jolla, CA 92037-1143 (US).																									
(22) International Filing Date: <b>3 October 1996 (03.10.96)</b>		(74) Agent: SEIDMAN, Stephanie, L.; Brown Martin Haller & McClain, 1660 Union Street, San Diego, CA 92101 (US).																									
(30) Priority Data:		<table> <tr> <td>538,387</td> <td>3 October 1995 (03.10.95)</td> <td>US</td> </tr> <tr> <td>567,746</td> <td>5 December 1995 (05.12.95)</td> <td>US</td> </tr> <tr> <td>639,813</td> <td>2 April 1996 (02.04.96)</td> <td>US</td> </tr> <tr> <td>633,410</td> <td>10 June 1996 (10.06.96)</td> <td>US</td> </tr> <tr> <td>669,252</td> <td>24 June 1996 (24.06.96)</td> <td>US</td> </tr> <tr> <td>711,426</td> <td>5 September 1996 (05.09.96)</td> <td>US</td> </tr> <tr> <td>709,435</td> <td>6 September 1996 (06.09.96)</td> <td>US</td> </tr> <tr> <td>723,423</td> <td>30 September 1996 (30.09.96)</td> <td>US</td> </tr> </table>		538,387	3 October 1995 (03.10.95)	US	567,746	5 December 1995 (05.12.95)	US	639,813	2 April 1996 (02.04.96)	US	633,410	10 June 1996 (10.06.96)	US	669,252	24 June 1996 (24.06.96)	US	711,426	5 September 1996 (05.09.96)	US	709,435	6 September 1996 (06.09.96)	US	723,423	30 September 1996 (30.09.96)	US
538,387	3 October 1995 (03.10.95)	US																									
567,746	5 December 1995 (05.12.95)	US																									
639,813	2 April 1996 (02.04.96)	US																									
633,410	10 June 1996 (10.06.96)	US																									
669,252	24 June 1996 (24.06.96)	US																									
711,426	5 September 1996 (05.09.96)	US																									
709,435	6 September 1996 (06.09.96)	US																									
723,423	30 September 1996 (30.09.96)	US																									
(71) Applicant (for all designated States except US): IRORI [US/US]; Suite 100, 11025 North Torrey Pines Road, La Jolla, CA 92037 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).																									
(72) Inventors; and (75) Inventors/Applicants (for US only): NOVA, Michael, P. [US/US]; 16428 La Gracia, Rancho Santa Fe, CA 92067 (US). POTASH, Hanan [IL/US]; 6524 Caminito Northland, La Jolla, CA 92037 (US). XIAO, Xiao-Yi [CN/US]; 4951 Riding Ridge Road, San Diego, CA 92130 (US). SARGENT, Bradley, J. [US/US]; 15260 Socorro Way, San Diego, CA 92129 (US). PARANDOOSH, Zahra [US/US];		Published <i>Without international search report and to be republished upon receipt of that report</i>																									
(54) Title: MATRICES WITH MEMORIES, SENSORS WITH MEMORIES AND USES THEREOF																											
(57) Abstract																											
<p>Combinations, called matrices with memories, of matrix materials that are encoded with an optically readable code are provided. The matrix materials are those that are used in as supports in solid phase chemical and biochemical syntheses, immunoassays and hybridization reactions. The matrix materials may additionally include fluorophores or other luminescent moieties to produce luminescing matrices with memories. The memories include electronic and optical storage media and also include optical memories, such as bar codes and other machine-readable codes. By virtue of this combination, molecules and biological particles, such as phage and viral particles and cells, that are in proximity or in physical contact with the matrix combination can be labeled by programming the memory with identifying information and can be identified by retrieving the stored information. Combinations of matrix materials, memories, and linked molecules and biological materials are also provided. The combinations have a multiplicity of applications, including combinatorial chemistry, isolation and purification of target macromolecules, capture and detection of macromolecules for analytical purposes, selective removal of contaminants, enzymatic catalysis, cell sorting, sensors and drug delivery, chemical modification and other uses. Methods for tagging molecules, biological particles and matrix support materials, immunoassays, receptor binding assays, scintillation proximity assays, non-radioactive proximity assays, and other methods are also provided. Sensors containing a memory in combination with a matrix are also provided.</p>																											